AN ANALYSIS OF BOC EXAM FIRST-ATTEMPT PASS RATES IN ATHLETIC TRAINING PROFESSIONAL PROGRAMS

Nicole Phegley, LAT, ATC

Submitted to the faculty of the University Graduate School
in partial fulfillment of the requirements
for the degree
Master of Sciences in Kinesiology
in the Department of Kinesiology of
Indiana University
May 2014

Accepted by the Graduate Faculty, Indiana University, in partial fulfillment of the requirements for the degree of Master of Science in Kinesiology.

Joanne Klossner, Ph.D., ATC

Carrie L. Docherty, Ph.D., ATC, FNATA

Josh Yellen, EdD., ATC

April 23, 2014

ACKNOWLEDGEMENT

"Education is the most powerful weapon which you can use to change the world." –Nelson Mandela

Each of the following individuals contributed to my education and success while at Indiana University. I would like to thank each of them for their continuing support.

To my family, Katherine (mother), Darrell (father), Julie (sister), and Kyle (brother)—you put up with my crazy academic and clinical schedules through the last two years. Thank you for supporting me in all my life decisions so far and in the future.

To my thesis committee, Dr. Joanne Klossner, Dr. Carrie Docherty, and Dr. Josh Yellen—I have been sincerely blessed with having had each of you collaborate on this project. Thank you for allowing me to create my own path with this project and for dedicating so much of your time and knowledge.

I would also like to thank Jackie Kingma and Dr. John Schrader for their ongoing support. Although you were not committee members, I appreciated your feedback on my proposal document and final thoughts on my defense presentation.

To Dr. Katie Grove and Kip Smith—thank you for giving me the opportunity to be your teaching assistants in your athletic training program classes. I gained invaluable experiences that I will utilize in my future.

I would like to thank my clinical mentors—Joel Langemaat, Regina Hash, Andrea Roth, and Kelley Riegner. Each of you has had a hand in shaping me into the clinician I am today. I cannot thank you enough for all of your individual support.

To the rest of the athletic training staff in Assembly Hall—it has been an honor to work along side each of you over the last two years. Each of you has provided me with an exceptional example of the type of clinician I will always strive to be.

To my classmates—first years, Andrew, Brittany, Jess, Joss, Kate, Sara, and Tim, you seven have made my final year at IU such a memorable and entertaining experience. I could not imagine finishing up here without having gotten to know each of you. Second years, Billy, Felicia, JP, Kristin, Lauren, and Mark, these last two years have been a rollercoaster of emotions and experiences. I am beyond thankful to haven gotten to know each of you and completed this program with you.

I wanted to give an extra thank you to two individuals that started this adventure with me on day one of preseason football and finished with sitting on both sides of me at our graduation. Billy Means and Felicia Dunn—you both have provided me with mental, physical, and emotional support whether I thought I needed it or not throughout this journey. I would not have survived these past two years without your friendship. I truly value both of you and cannot wait to continue the memories in the many years to come.

ABSTRACT

When assessing athletic training professional programs (PPs) today, the main goal of the program is to prepare students to join the healthcare profession as certified athletic trainers. The elimination of the internship route-to-certification in 2004, meant in order to sit for the Board of Certification examination (BOC exam), a student had to complete an undergraduate professional program (UPP) or graduate professional program (GPP). Since this change, there has been minimal research looking at the characteristic differences between UPPs and GPPs. There has also been little research comparing BOC exam pass rates between candidates from these two types of PPs. Therefore, the purpose of this investigation was 1) to determine how BOC exam first-attempt pass rates compare between UPPs and GPPs; and 2) to determine what personnel differences exist between UPP and GPP's program directors (PDs), faculty, and athletic training students. We used entire population, 365 PP (338 UPPs and 27 GPPs), to compare BOC exam first-attempt pass rates between UPPs and GPPs. We also collected 3-year aggregated BOC exam first-attempt pass rates for all PP from the Commission on Accreditation of Athletic Training Education (CAATE) website. We used the Athletic Training Program and Program Director Survey (ATPPDS) to collect the PP personnel data. 133 program directors (66 females, 67 males; 121 UPPs, 12 GPPs; 36% response rate) from each of the ten NATA districts (districts 1-10 respectively: 5, 13, 22, 28, 15, 6, 6, 9, 22, 7) completed the ATPPDS. The ATPPDS was a web-based survey (Qualtrics.com), comprised of 26 questions (12 multiple choice—select single answer, 2 multiple choice—select all answers that apply, and 12 fill-in answer). Data was collected during two separate, four-week periods allowing more opportunities for the PDs to complete the survey. We predicted there would be a significant difference between UPPs and GPPs for 1) BOC exam first-attempt pass rates; 2) program director characteristics; 3) faculty

characteristics; and 4) athletic training students characteristics. An independent t-test analysis revealed a statistically significant difference between the UPPs and GPPs' BOC exam first-attempt pass rates. GPPs had a higher aggregated pass rate ($t(38)=-3.88$, $p=.01$). We identified no significant differences for PD characteristics for education-levels ($p=.08$) and PD route-to-certification ($p=.64$) between UPPs and GPPs. We found that 60% of the PDs from UPPs had a terminal degree compared to 83% of the PDs from GPPs. The route-to-certification results that fifty-one percent of UPP PDs and 58% of GPP PDs obtained their credential from the internship route-to-certification. We identified no significant difference between UPPs and GPPs in regards to the number of full time faculty, the number of adjunct faculty with no clinical responsibility, and the number of adjunct faculty with clinical responsibility. We identified a significant difference between UPPs and GPPs for the number of athletic training students in the program ($t(131)=2.31$, $p=.02$) and graduating cohort average GPA ($t(113)=-4.55$, $p=.01$). We identified no significant difference for the graduating cohort size ($t(131)=.464$, $p=.64$). When students pass the BOC exam it means they are prepared to enter the profession as entry-level athletic trainers. Based on the single element that GPPs had a larger percentage of students passing the BOC exam on the first-attempt, these students were better prepared to pass the BOC exam and better prepared to enter the profession. This finding should provide support to the current education reform discussions on whether GPPs should be the sole route-to-certification for the athletic training profession.

TABLE OF CONTENTS

	PAGE
ABSTRACT	iv
TABLE OF CONTENTS	vii
MANUSCRIPT	
Introduction	1
Methods	3
Results	5
Discussion	7
References	15
Tables	17
Figures	20
APPENDICES	
Appendix A: Operational Definitions, Assumptions, Delimitations, Limitations, Statement of the Problem, Dependent and Independent Variables, Hypothesis	27
Appendix B: Review of Literature	37
Appendix C: Athletic Training Program and Program Directors Survey (ATPPDS)	49
Appendix D: Statistical Power	56
Appendix E: Undergraduate Professional Programs & Program Directors Info	58
Appendix F: Graduate Professional Programs & Program Directors Info	68

INTRODUCTION

The educational aspect of the athletic training profession is unique in that it is structured and influenced by three organizations, the National Athletic Trainers' Association (NATA), the Board of Certification (BOC), and the Commission on Accreditation of Athletic Training Education (CAATE). These three organizations function independently of each other but also collaborate to produce consistent criteria for athletic training education. The NATA is responsible for creating the Athletic Training Education Competencies (Competencies) that outline the minimum knowledge, skills, and abilities entry-level athletic trainers must develop. Therefore, these guide the development of classes and other educational experiences for athletic training students (ATSs)[1]. The CAATE is the accrediting agency for academic accreditation of professional programs and is responsible for developing the Standards for the Academic Accreditation of Professional Athletic Training Programs (Standards). The Standards are used "for the development, evaluation, analysis, and maintenance of athletic training programs."[2] Lastly, the BOC, which is recognized by the NATA as the professional credentialing agency for athletic trainers, is responsible for the Board of Certification examination (BOC exam) and Role Delineation Study/Practice Analysis (RDS/PA). In the future, the RDS/PA will be called simply the Practice Analysis (PA).

In 1959, the NATA approved the very first athletic training curriculum model. It took ten years until the NATA Professional Education Committee approved the first undergraduate professional programs UPPs in 1969 (Mankato State University, Indiana State University, Lamar University, and New Mexico University). Three years later, in 1972, the NATA Professional Education Committee approved the first graduate professional programs GPPs (Indiana State University and University of Arizona).[3,4] In the last 40 years there has been substantial growth

in the number of professional programs (PPs). Currently, in 2014, there are a total 365 PPs, with 338 UPPs and 27 GPPs.

Each year, once the professional degree requirements have been met, ATSs across the country sit for the BOC exam in order to become certified athletic trainers. The BOC exam is used to evaluate entry-level athletic training knowledge and determines if the ATS is ready to enter the profession. The PA "identifies essential knowledge and skills for the athletic training profession and serves as a blueprint for exam development".[2] The PA is a critical tool used to insure that the BOC exam material is current and relevant to athletic training practices.

There has been a great deal of change since the first athletic training certifying exam was administered in 1970. The most recent changes to the exam were in 2007, with it changing from a three-part exam to a singular computer-based exam. Prior to 2007, the three-parts included a written, written-simulation, and a practical section. In order to pass the exam, ATSs had to successfully reach a prescribed score on each section. Now ATSs take a single exam that is made up of 175 scored and unscored (experimental) questions. Test questions fall into one of three categories: "stand-alone multiple choice questions, stand-alone alternative items (drag-and-drop, text based simulation, multi-select, hot spot, etc.), or focused testlets (a 5-item focused testlet consists of a scenario followed by 5 key/critical questions related to that scenario)"[5]. The time limit for the exam is four hours and scoring is 200-800, with 500 needed to pass. The BOC exam has seen many changes through the years and the same can be said about UPPs and GPPs.

In recent years, the call for further standardizing of athletic training education is due to the concern of the immense growth in PPs. The current education reform discussion revolves around whether PPs should only occur at the graduate-level. While the recent release of a 'white' paper entitled, "Professional Education in Athletic Training: An Examination of the

Professional Degree Level", discusses the differences between the two types of PPs, undergraduate and graduate, there has been little research in the field comparing the similarities and differences in both types of PPs and how such differences may or not impact program outcomes. There is also a general lack of research specifically looking at characteristic components of UPPs and GPPs related to information about the program directors (PDs), faculty, and ATSs. The 'white' paper directly references this absence of research in stating, "there are no studies in athletic training that directly compare the outcomes of undergraduate-level professional education programs with those professional programs at the graduate level"[6]. In looking at ways to define PP outcomes successes, the BOC exam pass rate is one way to determine the overall learning achieved by the ATSs[7]. There is minimal research, however, examining the relationship of BOC exam first-attempt pass rates between UPPs and GPPs. Therefore, the purpose of this study is to compare BOC exam first-attempt pass rates and personnel components between UPPs and GPPs. Specifically, our research questions are: 1) How do BOC exam first-attempt pass rates compare between UPPs and GPPs? and 2*)* What differences exist between UPPs and GPPs' PD, faculty, and ATS characteristics?

METHODS

We collected data from two sources. We obtained the first source information from the CAATE website. We captured three-year aggregated BOC exam first-attempt pass rates from 2011-2013 for every CAATE accredited PP. We collected the second source of data from the Athletic Training Program and Program Director Survey (ATPPDS).

Participants

We recruited PDs from all CAATE accredited PPs (n=358) to participate via email. We obtained email addresses from the CAATE website directory (www.caate.net). We obtained University IRB approval and consent from all PDs prior to their participating in the study.

Instrument

There is no known survey out there that identifies characteristic information about PPs, specifically of PDs, faculty, and ATSs. We developed a web-based survey, ATPPDS, to address this need. We field tested the ATPPDS with three PDs to verify its content validity. We received feedback from the field test that ensured the content from the survey questions were correct for the type of data we were looking to collect. We imputed the survey questions into the Qualtrics Survey (Qualtrics Survey Software, www.qualtrics.com). We included three sections in the survey, PD characteristics, program characteristics, and curriculum structure (See Appendix C). In addition, we formatted the questions in three different ways in order to allow for easier analysis of the PD's responses. The three question formats were: multiple choice—select single answer, multiple choice—select all answers that apply, and fill-in answer. There were a total of 26 questions; twelve multiple-choice—select single answer questions (46%), two multiple-choice—select all answers that apply questions (8%), and twelve fill-in the blank questions (61%).

Procedures

We sent emails to all PDs with a link to the survey. The survey was open for two separate four-week periods for PDs to access; one session at the beginning of the summer and the second at the end of the summer. This was done to increase response rate and allow more opportunities for PDs to complete the survey. PDs could stop the survey without any consequences at anytime. The results were reported automatically on the Qualtrics software and the data was

exported to an Excel spreadsheet. We only used aggregate data for this study. Also, we removed personal identifiers prior to data presentation or publication.

Statistical Analysis

There are considerably more UPPs (n=338) than GPPs (n=27). Subsequently we needed to account for this in the statistical analysis. To create a random sample of UPPs, the function 'sample' was used in R (version 3.0.2 for windows; Vienna, Austria). The sample function is written for a random sample to be drawn in which each element has an equal probability of being sampled. Sampling was done without replacement so duplicates were avoided. When sampling without replacement, the probabilities are applied sequentially, that is the probability of choosing the next item is proportional to the weights amongst the remaining items. From these random samples an independent t –test was conducted to evaluate differences in 3-year aggregated BOC exam first-attempt pass rates between the UPPs and GPPs.

We ran additional independent t-tests for each section of the survey. For the PD characteristic section, we evaluated the following items between the two education levels: PD route-to-certification and PD education-level (Table 1). For the faculty characteristic section, we evaluated the following items between the two education levels: number of full time faculty, number of adjunct faculty with no clinical responsibilities, and number of adjunct faculty with clinical responsibilities (Table 2). Finally for the ATS characteristic section, we evaluated the following items between the two education levels: number of ATS in the program (Figure 4), graduating cohort GPA (Figure 3), and graduating cohort size (Figure 5). We calculated descriptive statistics and frequencies for all items.

RESULTS

Programs

One hundred and thirty-three programs met the inclusion criteria in the study. Our subjects were PDs of an UPP (n=121/338) or GPP (n=12/27). Table 1 describes the characteristics of the sample. Our participants represented all ten NATA Districts (Figure 1). Our response rate for professional programs that participated in our study was 36%.

Research Questions

Question 1: How do BOC exam first-attempt pass rates compare between UPPs and GPPs?

An independent t-test analysis revealed a statistically significant difference between the undergraduate and graduate programs BOC exam first attempt pass rates with graduate programs having a higher aggregated pass rate ($t(38)=-3.88$, $p=.01$). Specifically, the graduate programs had a 91% pass rate while the undergraduate programs only had a 79% pass rate (Figure 2).

Question 2: What differences exist between UPPs and GPPs' PD, faculty, and ATS characteristics?

We identified no significant differences in PD characteristics between UPPs and GPPs ($p> .05$). Two aspects of the PD characteristics which should be highlighted are 1) highest level of education and 2) route-to-certification. While not statistically significant, a higher percentage of PDs in GPPs held terminal degrees ($p=.08$). We found that 83% of the PDs from the GPPs held a terminal degree compared to 60% of the PDs from the UPPs (Table 1). Additionally, results showed that 51% of UPP PDs and 58% of GPP PDs were educated via the internship route-to-certification (Table 1).

We identified no significant differences between UPPs and GPPs in regards to the number of full time faculty, the number of adjunct faculty with no clinical responsibility, and the number of adjunct faculty with clinical responsibility (Table 2).

In evaluating the ATS characteristics, we identified a significant difference between UPPs and GPPs in two areas: 1) number of ATSs in the ATP ($t(131)=2.31$, $p=.02$) and 2) graduating cohort average GPA ($t(113)=-.445$, $p=.01$). We outline the results in Figure 3 and Figure 4, respectively. We identified no significant difference between UPPs and GPPs in regards to the graduating cohort size ($t(131)=.464$, $p=.64$), Figure 5.

DISCUSSION

GPPs had a statistically significant higher BOC exam first-attempt pass rate compared to UPPs. There is minimal previous research looking at this particular relationship, but the NATA Executive Committee for Education's 'white' paper publication in December 2013, discussed the percentage of PPs that did not meet the current CAATE Standards. They also used aggregated BOC exam first-attempt pass rates from 2011-2013 to report their results. The difference in their reported findings, 77% for UPPs and 94% for GPPs, compared to our findings, 79% for UPPs and 91% for GPPs, was due to our data represented only 36% of the PPs whereas their data represented 100% of the PPs. The Standards require PPs to have a minimum aggregate (3 year) first-time BOC examination pass rate of 70%"[6]. The 'white' paper reported that "when the first-time pass rate is examined on a program-by-program basis, 28% of undergraduate professional programs fail to meet the standard, compared to only 3.7% of graduate professional programs"[6]. This supports our finding of GPPs having a higher BOC exam first-attempt pass rate compared to UPPs. The higher percentage of UPPs that failed to meet the standard means a larger number of individual UPPs had BOC exam first-attempt pass rates below 70%. In the following paragraphs the differences and similarities between UPPs and GPPs will be discussed to further support our findings. They will be broken down into three sections, PD, faculty, and ATSs.

Program Director

The current CAATE Standards do not require professional level PDs to hold an academic terminal degree. A PD must be a full time employee of the sponsoring institution, BOC certified, state credentialed, and in good standing with the BOC and state regulatory agency.[2] "The success and failures of a professional organization, however, are often defined by the quality of the leadership managing the organization"[8]. With a terminal degree, PDs are more effective leaders and are better able to enhance their professional program[9]. These leadership behaviors are learned through experiences and formal education[10,11]. Our study revealed that 38% of PP PDs possessed a master's degree, thus only 62% had a terminal degree. Our finding was supported by similar characteristic results in other research where PDs reported their highest level of education[9,12-14]. A large number of PPs are missing out on a greater quality leader to provide the best direction and outcomes for these programs[9,13,15]. PDs that hold a doctorate degree are better prepared to meet the job requirements placed on them by CAATE and their employing University[9]. These PDs are better quality leaders and this quality helps enhance their ATPs[9]. Furthermore, discourse in the field supports the need for a more uniform path to preparing athletic training educators by means of athletic training education doctoral programs[12,13,15]. As part of this path, athletic training educators and the PPs that they instruct would benefit with the inclusion of pedagogical training into their education[13,15-22].

Not only did we find a large percentage of PDs without a terminal degree, but also an even larger percentage of PDs were educated through the internship route to receive their credential. Prior to eliminating the internship route, a research study in 1995 found a statistically significant difference in the scoring between curriculum candidates and internship candidates due to the differences in academic requirements between the two routes to BOC certification.[23] Since 2004, the internship route to certification has been eliminated to create a single means of

becoming eligible for certification[24,25]. With only ten years having passed since this change, this could explain why the majority of PDs in our sample obtained their credential through the internship route. It is important to question, with so many PDs coming from the internship route, what implications this might have on our current PPs. It is important to consider that once this generation of PDs retires, how will the curriculum-only generation influence and change PPs?

Faculty

The ATPPDS data illustrated that the number and type of didactic faculty was similar between UPPs and GPPs (Table 2). While the average number of full time faculty has been found to be 2.1[26]. We found the average number of PP's full time faculty to be 2.9. There was little difference in the number of faculty when looking at the different types of faculty. UPPs had an average of 2.8 full time faculty and GPPs had an average of 3.4 full time faculty. These PPs had a similar number of faculty numbers and a different number of ATSs. GPPs would in theory have a smaller student-to-faculty ratio, allowing us to argue that these professional programs provide more individualized opportunities for their students.

Athletic Training Students

The three ATSs characteristic components from the ATPPDS include: 1) PP size, 2) graduating cohort size, and 3) graduating cohort GPA. The characteristic data from these components help to give an idea how UPPs and GPPs students are similar and different.

We found that the total number of ATSs was lower with graduate programs. This could be due to similar sized cohort sizes but fewer cohorts at the graduate level. Most GPPs are about two years in length, and result in two cohort classes at a time. This is compared to undergraduate UPPs where the length after acceptance into the PP is 2-3 years in length, resulting in two-three

cohort classes at time. This was supported with data collected from the ATPPDS, finding that graduating cohort size was similar between UPPs and GPPs.

In looking at the total number of ATSs in the PP compared to BOC exam first-attempt pass rates, the 'white' paper recommends consolidating faculty and ATSs into larger but fewer PPs. The 'white' paper argues, this consolidation will assist ATSs to perform better on the BOC exam and that the large number of PPs "dilutes the pool of focused students, dilutes the faculty pool, and limits the amount of scholarship that can be performed by faculty"[6]. Our findings contrast this recommendation. We found that GPPs had a significantly lower number of ATSs and significantly higher BOC exam first-attempt pass rates compared to UPPs (Figures 2 and 4). It is important to consider another component that influences the students in GPPs performing better on their first-attempt at the BOC exam than undergraduate program students; that being their increased age and increased education experience.

GPPs students are going to be older and more dedicated to their education, because they are making the decision to go back to school to obtain a graduate's degree[6]. "It is also commonly accepted that regardless of discipline, graduate students are more mature, self-directed, and independent learners than undergraduate students. Chronological age and simple maturation likely accounts for greater levels of self-directed learning, lesser levels of procrastination, and greater use of critical thinking strategies reported by graduate students in general"[27]. Generally, some or all graduate-level ATSs would fall into the category of 'adult learners' category due to their increased age and being solely responsible for themselves. In being an adult, these students bring in previous experiences that should be respected and built upon[28]. The way GPPs' are structured, with pre-professional and professional material studied separately, allows for graduate-level ATSs to build upon the foundation of pre-professional information[6]. This

academic structuring is ideal for 'adult learners' and could explain why graduating cohort GPA and BOC exam first-attempt pass rates for graduate programs were both significantly higher than UPPs (Figures 2 and 3). The 'white' paper argues how graduate program students are more dedicated to their educational studies, because these students have made the decision to make their living in the athletic training profession[6]. Therefore, these students have already made a conscious choice to incur the costs of going to graduate school after already earning a degree[6]. They will stay within the profession of athletic training from the beginning of the PP and may place more value on the content being taught to them. This more focused approach may support why GPPs students have higher graduating cohort GPAs.[6,27]

Another reason why GPPs have higher graduating cohort GPAs could be the result of higher academic standards at the graduate level. ATSs in a GPP have 3-4 years of previous formal education from completing their bachelor degree, and generally during that time they have identified their preferred learning style that has allowed them to be successful ATSs by time they are graduate students. GPPs usually require a high bachelor's GPA and many require high GRE standards in order to be accepted into the PPs. This allows us to reason that these students had a solid foundation from the pre-professional education material, which allowed them to be academically successful at the graduate level. This pre-professional preparation is extremely important and the basic sciences learned during that time provide the foundations on which athletic training content specific classes build upon.

Currently, discourse in the field suggests that the demands from undergraduate programs do not allow for students to prepare a strong basic science foundation prior to beginning the professional content[6,29]. GPPs require their students to complete the pre-professional material prior to their admittance and this material is usually completed during their undergraduate

degree. In contrast, UPPs complete this pre-professional material in conjunction with their PP material. The 'white' paper encourages that by separating the pre-professional and professional material, that students build upon their pre-professional knowledge to enhance their learning of professional content, rather than having to learn all of it concurrently[6].

Limitations

Literature in the field is limited to how the BOC exam first-attempt pass rates compare between UPPs and GPPs. There is also limited research comparing UPP and GPPs' characteristics for PDs, faculty, and students. Further limitation involves the data collection. The BOC exam first-attempt pass rates was aggregated data collected from 2011-2013, while the data from the ATPPDS was collected for the 2013 academic year.

Recommendations for Future Study

In completing this study, we have discovered many avenues of research that need further study. We suggest future studies should: 1) Compare PPs to other healthcare programs. We think that a similar evaluation that was used in this study could be used to evaluate and compare other healthcare programs. This would allow our profession to see where our educational programs stand. This would also, allow us to identify potential opportunities for change and growth. 2) Evaluation of the pre-professional, professional, and post-professional education. We feel this evaluation needs to look more at the didactic components that are found in each of these. We would be interested to see where the overlap is and make recommendations to make the educational programs more efficient. 3) Compare individual athletic training student's data between UPPs and GPPs. We think future studies need to include further and more detail data collection of student characteristics, but with the athletic training students as the subjects. 4) Compare attrition rates in relation to professional loyalty. There is a lot of discussion about how

do we keep our best and brightest students in the profession[6,30]. Future research should look at professional attrition rates between graduates of UPPs and GPPs. Also, we want to collect qualitative data should to look at what reasoning is given for students staying or leaving the profession upon graduating a PP. 5) Consider why PP are not meeting the CAATE Standard specific to the 70% aggregate BOC exam first-attempt passing rate. We want to collect qualitative data from PDs to see what they believe is causing these issues. 6) Further evaluation of relationship between PDs and level of education. This relationship should be considered in terms of ATS and the PPs outcomes and successes. Depending on the results, they could influence the need for change to the CAATE Standards to require PDs to hold a terminal degree. 7) We want to further investigate the education backgrounds of PDs and faculty of PPs related to the field in which they are teaching. Further importance placed on whether teaching and pedagogy experiences influences teaching success and student outcomes.

Conclusion

In 1996, the current NATA President, Denny Miller, ATC, PT was quoted in the NATA News saying, "From the people in the field, the committee chairs, the members, a single request kept coming back: We've really got to look at where we're at, where we need to be—and it all comes back to education".[31] Just like during the last education reform, when looking at the future direction of the profession and what we need to do to get there, education should be at the heart of discussion. GPPs better prepare ATSs to be successful on the BOC exam, also better preparing them to enter the profession as entry-level athletic trainers. Similar to the elimination of the internship route, the GPP route has been identified as the ideal education model for preparing ATSs to be successful entry-level athletic trainers. GPPs distinct separation of pre-

professional and professional academic material prepares ATSs to be more successful in their academics and in passing their BOC exam on the first-attempt.

References

1. NATA. Athletic Training Education Competencies 5th Edition. 2011:1-32.
2. CAATE. *Standards for the Academic Accreditation of Professional Athletic Training Programs:* 2012.
3. Delforge GD, Behnke RS. The history and evolution of athletic training education in the united states. *J Athl Train*. 1999;34(1):53-61.
4. Perrin DH. Athletic training: from physical education to allied health. *Am Aca Kin Phys Educ*. 2007;59:111-123.
5. BOC. Exam Development & Scoring. http://www.bocatc.org/index.php?option=com_content&view=article&id=45&Itemid=47. Accessed September 30, 2012.
6. ECE. Professional education in athletic training: an examination of the professional degree level2013:1-23.
7. Turocy PS. Overview of athletic training education research publications. *J Athl Train*. 2002;37(4 Supplement):S162-S167.
8. Katch R, Tomczyk K, Shinkle B, Berry D. Student's perspectives of leadership development. *Athl Train Educ J*. 2013;8(1-2):23-29.
9. Odai ML. *An investigation of the relationships between selected characteristics and leadership outcomes of athletic training education program directors*. Miami, Florida: College of Education, Florida International University; 2012.
10. Brown LM, Posner BZ. 2001. *Leadership Organ Dev J*. Exploring the relationship between learning and leadership;22:274-280.
11. Laurent TG, Bradney DA. Leadership behaviors of athletic training leaders compared with leaders in other fields. *J Athl Train*. 2007;42(1):120-125.
12. Leone JE, Judd MR, Colandreo RM. Descriptive qualities of athletic training education program directors. *Athl Train Educ J*. 2008;Apr-Jun:43-49.
13. Rich V. Employment characteristics, educational histories, and pedagogical training of educators in caate-accredited athletic training education programs. *Athl Train Educ J*. 2009;4:131-138.
14. Passauer BM. *Administrative preparation of undergraduate athletic training program directors*, University of Pittsburgh; 2004.
15. Hertel J, West T, Buckley W. Educational history, employment characteristics, and desire competencies of doctoral-educated athletic trainers. *J Athl Train*. 2001;36(1):49-57.
16. Bligh J. Learning from uncertainty: a change of culture. *Med Educ*. 2001;35:2-3.
17. Cochran KF, DeRuiter KA, King RA. Pedagogical content knowing: an integrative model for teacher preparation. *J Teacher Educ*. 1993;44:263-272.
18. Cochran-Smith M. The new teacher education: for better or worse? *Educ Researcher*. 2005;34:3-17.
19. Feinman-Nemser S, Parker MB. Making subject matter part of the conversation in learning to teach. *J Teacher Educ*. 1990;41:32-43.
20. Kreber C. The scholarship of teaching and its implementation in faculty development and graduate education. *New Directions for Teaching and Learning*. 2001;86:79-88.
21. McLeod PF, Steinert Y, Meagher T, McLeod MA. The abcs of pedagogy for clinical teachers. *Med Educ*. 2003;37:638-644.

22. Shulman LS. Those who understand: knowledge growth in teaching. *Educ Researcher*. 1986;15:4-14.
23. Starkey C, Henderson J. Performance on the athletic training certification examination based on candidates' routes to eligibility. *J Athl Train*. 1995;30(1):59-62.
24. Craig DI. Educational reform in athletic training: a policy analysis. *J Athl Train*. 2003;38(4):351-357.
25. Rich VJ, Kedrowski JJ, Richter S. Institutional profiles of caate accredited entry-level athletic training education programs in the united states. *J Athl Train*. 2008;3:108-114.
26. Freesemann KW. An evaluation of select athletic training education programs administration and educational structure: University of Southern California; 2000.
27. Artino AR, Stephens JM. Academic motiviation and self-regulation: a comparative analysis of undergraduate and graduate students learning online. *Internet Higher Educ*. 2009;12(3-4):146-151.
28. Bryan RL, Kreuter MW, Brownson RC. Integrating adult learning principles into training for public health practice. *Health Promotion Practice*. 2009;10:557-563.
29. Wilkerson GB, Colston MA, Bogdanowicz BT. Distinctions between athletic training education programs at the undergraduate and graduate levels. *Athl Train Educ J*. 2006;1(Apr-Dec):38-40.
30. Mazerolle S, Gavin E, Pitney W, Casa D, Burton L. Undergraduate athletic training students' influences on career decisions after graduation. *J Athl Train*. 2012;47(6):679-693.
31. McMullen D. Renewing athletic training education--a step into the future. *NATA News*. 1996(February):17-18.

TABLES

Table 1. Frequency Distributions of PD Characteristics of PPs that responded to ATPPDS

Table 2. Descriptives of Faculty Characteristics of PPs for 2012-2013 academic year

Variable		Undergraduate n (% of total)	Graduate n (% of total)	Combined n (% of total)
Gender	Male	62 (51%)	5 (42%)	67 (50%)
	Female	59 (49%)	7 (58%)	66 (50%)
Ethnicity	African American	2 (2%)	0 (0%)	2 (0.02%)
	Caucasian	115 (96%)	12 (100%)	127 (95%)
	Asian American	1 (1%)	0 (0%)	1 (0.01%
	Hispanic	1 (1%)	0 (0%)	1 (0.01%)
	Multiracial	1 (1%)	0 (0%)	1 (0.01%)
Age	25 or younger	0 (0%)	0 (0%)	0 (0%)
	25-35	19 (16%)	0 (0%)	19 (14%)
	36-45	48 (40%)	5 (42%)	53 (40%)
	46-55	34 (28%)	6 (50%)	40 (30%)
	56-65	18 (15%)	1 (8%)	19 (14%)
	65 or older	2 (2%)	0 (0%)	2 (2%)
Credentials	ATC	110 (91%)	11 (92%)	121 (91%)
	Dual	11 (9%)	1 (1%)	12 (9%)
Education Level	Master	48 (40%)	2 (17%)	50 (38%)
	Doctorate	73 (60%)	10 (83%)	83 (62%)
Route-to-Certification	Internship	62 (51%)	7 (58%)	69 (52%)
	Curriculum	59 (49%)	5 (42%)	64 (48%
Total Years as PD	0-1	12 (10%)	0 (0%)	12 (9%)
	2-5	22 (18%)	2 (17%)	24 (18%)
	6-10	42 (35%)	4 (33%)	46 (35%)
	11-15	20 (17%)	3 (25%)	23 (17%)
	16-20	8 (7%)	3 (25%0	11 (8%)
	21+	17 (14%)	0 (0%)	12 (13%)
Years Teaching	0-1	1 (1%)	0 (0%)	1 (0.75%)
	2-5	5 (4%)	1 (8%)	6 (5%)
	6-10	23 (19%)	0 (0%)	23 (17%)
	11-15	28 (23%)	4 (33%)	32 (24%)
	16-20	24 (20%)	4 (33%)	28 (21%)
	21+	40 (33%)	3 (25%)	43 (32%)

Table 1. Frequency Distributions of PD Characteristics of PPs that responded to ATPPDS. Each cell represents the frequency (% of total). Undergraduate (n=121), Graduate (n=12), and Combined (n=133).

Variable		Undergraduate (n=121)	Graduate (n=12)	Combined (n=133)
# of Full Time Faculty	Mean (SD)	2.83 (1.86)	3.42 (1.08)	2.88 (1.81)
# of Adjunct Faculty (No Clinical Resp.)	Mean (SD)	1.33 (1.77)	2.92 (4.62)	1.47 (2.21)
# Adjunct Faculty (Clinical Resp.)	Mean (SD)	2.23 (2.14)	2.25 (2.05)	2.23 (2.13)

Table 2. Descriptives of Faculty Characteristics of PPs for 2012-2013 academic year. We identified a non-significant difference between UPPs and GPPs with the Number of Full Time Faculty (p=.28), Number of Adjunct Faculty with No Clinical Responsibilities (p=.26), and Number of Adjunct Faculty with Clinical Responsibility (p=.97).

FIGURES

Figure 1. NATA District Representation of ATPPDS responses

Figure 2. Three-year aggregated BOC exam first-attempt pass rates of PPs for 2011-2013

Figure 3. Descriptive of the Number of ATSs of PPs for 2012-2013 academic years

Figure 4. Descriptive of Graduating Cohort GPA of PPs for 2012-2013 academic years

Figure 5. Descriptive of the Graduating Cohort Size of PPs for 2012-2013 academic years

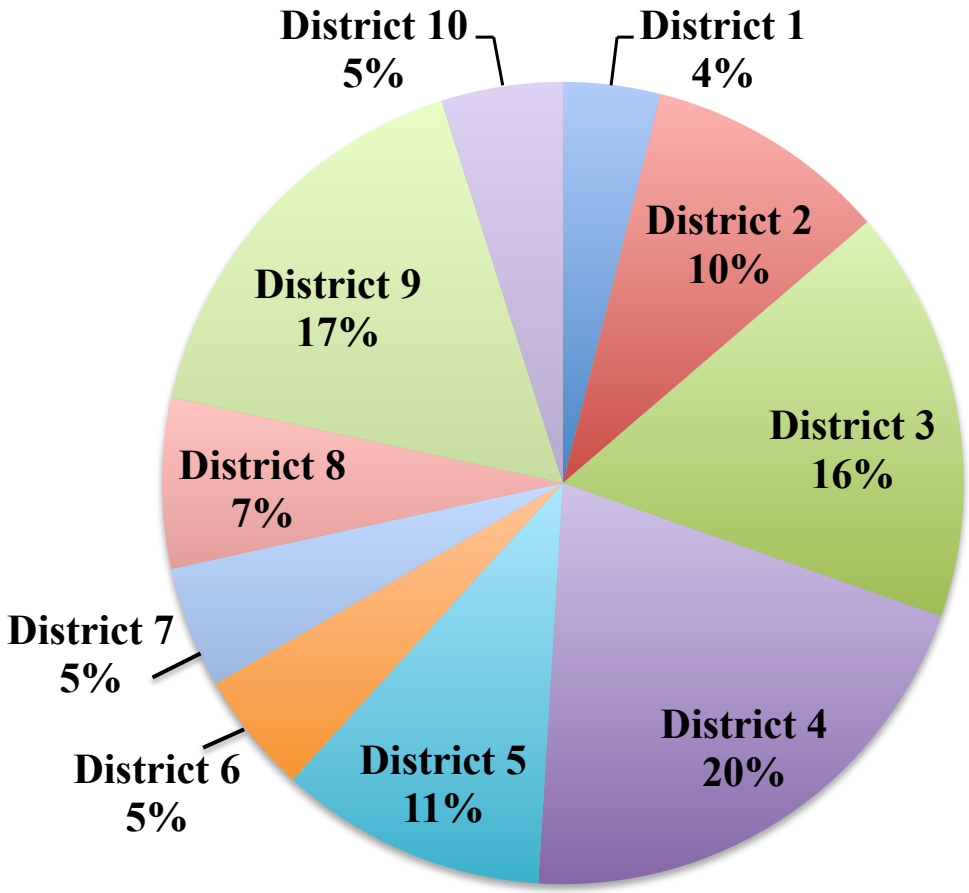

Figure 1. NATA District Representation of ATPPDS responses. Breakdown of NATA Districts represented by UPPs and GPPs that completed the ATPPDS.

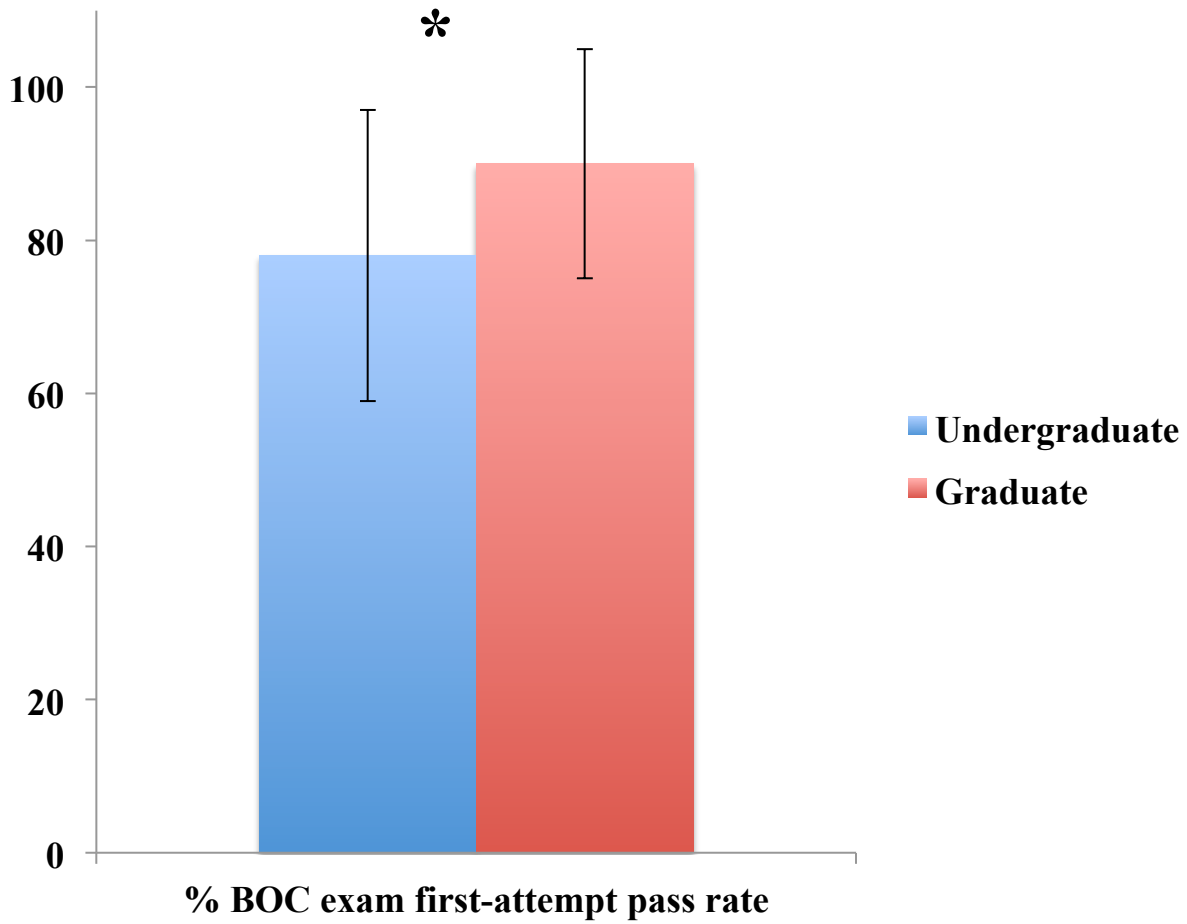

Figure 2. Three-year aggregated BOC exam first-attempt pass rates of PP for 2011-2013. The three-year aggregated BOC exam first-attempt pass rate was 79% for UPPs and 91% for GPPs. **Significant difference was found between UPPs and GPPs for BOC exam first-attempt pass rates ($t(38)=-3.88$, $p=.01$).*

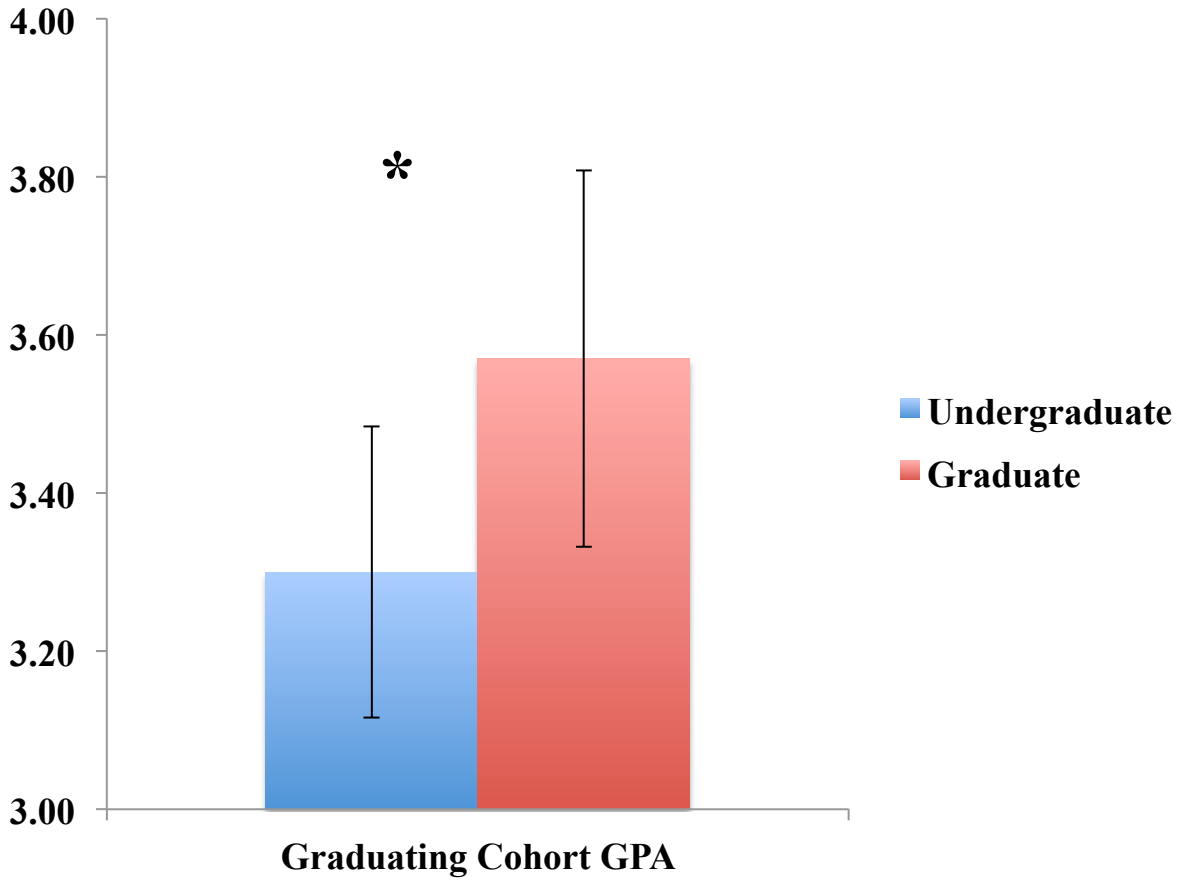

Figure 3. Descriptive of Graduating Cohort GPA of PPs for 2012-2013 academic years. UPPs' averaged a 3.30 GPA and GPPs' averaged a 3.57 GPA for the 2012-2013 academic year.

**Significant difference was found between UPPs and GPPs for the graduating Cohort Average GPA (t(113)=-.4.45, p=.01).*

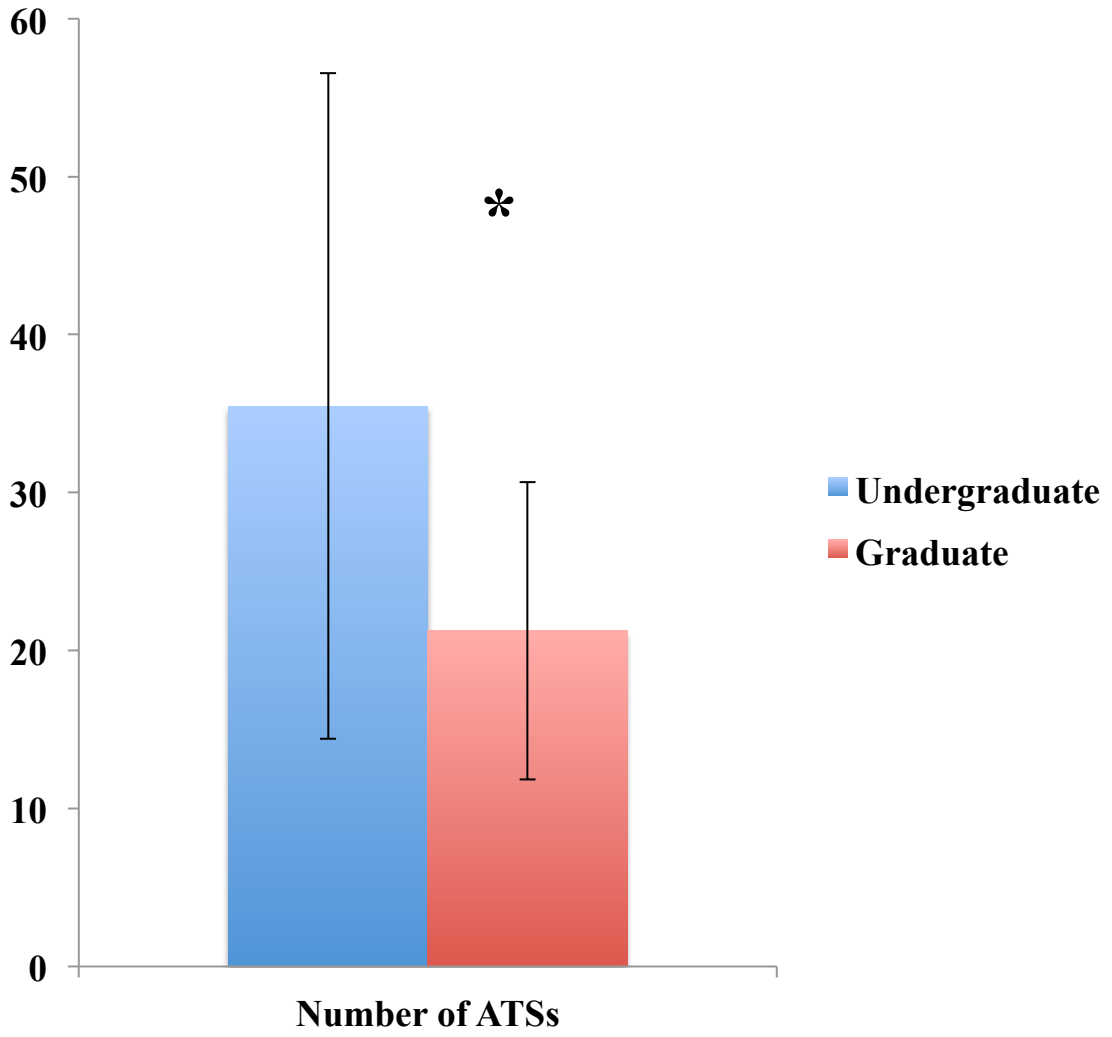

Figure 4. Descriptive of the Number of ATSs of PPs for 2012-2013 academic years. For the total number of ATSs in the PP, UPPs' averaged 35.5 ATSs and GPPs' averaged 21.3 ATSs for the 2012-2013 academic year.

**Significant difference was found between UPPs and GPPs for the number of ATSs in the PPs ($t(131)=2.31$, $p=.02$).*

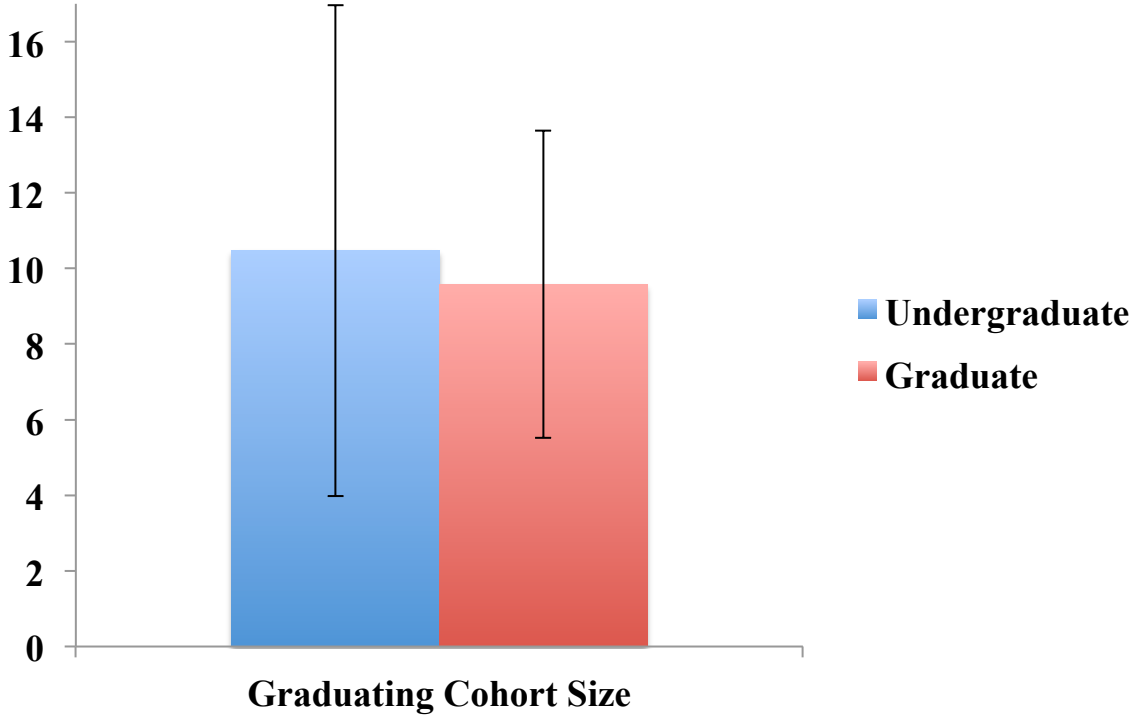

Figure 5. Descriptive of the Graduating Cohort Size of PP for 2012-2013 academic years. For the Graduating Cohort Size, UPPs' averaged 10.5 ATSs and GPPs' averaged 9.6 ATSs for the 2012-2013 academic year.

APPENDICES

APPENDIX A

OPERATIONAL DEFINITIONS

ASSUMPTIONS

DELIMITATIONS

LIMITATIONS

STATEMENT OF THE PROBLEM

DEPENDANT AND INDEPENDENT VARIABLES

HYPOTHESIS

Operational Definitions

Adjunct Faculty: A part time faculty member with or without clinical responsibilities.

Athletic Training Education Competencies (Competencies): Provides educational program personnel and others with knowledge, skills, and clinical abilities to be mastered by student enrolled in professional athletic training programs.[1]

ATPPDS: Athletic Training Program and Program Director Survey

Athletic Training Students (ATSs): Students that have been accepted into PP, but have not taken the BOC exam and are not certified athletic trainers.

Board of Certification (BOC): Establishes and regularly reviews both the standards for the practice of athletic training and the continuing education requirements for BOC certified athletic trainers. The BOC maintains the only accredited certification program for athletic trainers in the United States.[2]

BOC examination (BOC exam) first-attempt pass rates: Percentage of ATSs in a PP that pass the BOC exam on their first attempt.

Commission on Accreditation of Athletic Training Education (CAATE): Its purpose is to develop, maintain, and promote appropriate minimum education standards for quality for athletic training programs.[3]

Current BOC examination (BOC exam): The exam consists a combination of 175 scored and unscored (experimental) questions candidates do not know which questions are experimental. Candidates have a total of 4 hours to complete the exam.[4] ATS must pass this examination in order to become a certified athletic trainer.

Graduate Professional Program (GPP): A PP that is held at the graduate-level. Upon completion of this program, ATSs hold a master's degree and are eligible to sit for the BOC exam.

National Athletic Trainers' Association (NATA): The professional membership association for certified athletic trainers and others who support the athletic training profession.[5]

Post-Professional Graduate Program (PPGP): An educational program held at the graduate-level, that offers advanced study and experience within the athletic training domains. Students in a PPGP have already passed the BOC exam and are certified athletic trainers.

Professional program (PP): A competency-based approached program that is accredited by CAATE and prepares students to sit for the BOC exam and become certified athletic trainers[6].

Program Director PD: An academic individual in charge of a CAATE accredited PP.

Role Delineation Study/Practice Analysis (RDS/PA); soon to be Practice Analysis (PA): Defines the current entry-level knowledge, skills and abilities required for practice in the profession of athletic training. The RDS/PA serves as the blueprint for determining the content of the exam. [4]

The Standards for the Accreditation of Professional Athletic Training Programs (Standards): Used for the development, evaluation, analysis, and maintenance of athletic training programs. Provides minimum academic requirements to institutions.[3]

Undergraduate Professional Program (UPP): A PP that is held at the undergraduate-level. Upon completion of this program, ATSs hold a bachelor's degree and are eligible to sit for the BOC exam.

Assumptions

The following assumptions will apply to this study:

1. Subjects (PDs) would follow directions and provided, to their knowledge, truthful information.
2. The survey was clearly written and questions were understood by PDs.

3. ATSs would their best on the BOC exam and had a desire to pass the BOC exam on their first-attempt.
4. All ATSs' from a CAATE accredited PPs learned similar education knowledge needed to do well on the BOC exam.
5. The 3-year aggregated BOC exam first-attempt pass rate data posted on the CAATE website was correct and complete.

Delimitations

The following delimitations apply to this study:

1. The survey was an original survey, titled Athletic Training Program and Program Director Survey (ATPPDS).
2. Subjects were PDs from CAATE accredited PPs.
3. The entire population, 365 PDs, was contacted to complete the survey.
4. PPGP were not included in the study.
5. There was a focus on the characteristic components rather than on the didactic or clinical education components.
6. BOC exam first-attempt pass rates from 2011-2013 were used and obtained directly from the CAATE's website.
7. BOC exam first-attempt pass rates were used and overall pass rates would not be used in this study.
8. Data was obtained from PDs through the use of a web-based survey website called Qualtrics.
9. The web-based survey asked PDs about the PP from the 2012-2013 academic year.
10. Data analysis was completed using IMB SPSS Statistic Software.

11. Three PDs participated in a field test to evaluate the content validity of the ATPPDS.

Limitations

The following limitations would apply to this study:

1. That the PDs from CAATE accredited PPs responded and answered the survey.
2. That PDs had the information being asked for on the survey.

Statement of Problem

When assessing PPs today, the main goal of the program is to prepare ATS to join the healthcare profession as certified athletic trainers. As a profession, we measure successful preparation on whether or not the ATS can successfully pass the BOC exam. For the past 40 years, UPPs and GPPs have been preparing ATSs to do just that, but there is minimal research looking at the differences between the two types of programs. There has also been little research comparing UPPs and GPPs' BOC exam pass rates. The purpose of this study is to compare BOC exam first-attempt pass rates and characteristic components from under UPPs and GPPs. Specifically, my research questions are: 1) How do BOC exam first-attempt pass rates compare between UPPs and GPPs? and 2*)* What differences exist between UPPs and GPPs' PD, faculty, and ATS characteristics?

Independent Variables

Two independent variables were evaluated in this study:

1. UPPs
2. GPPs

Dependent Variables

1. 3-year aggregated BOC exam first-attempt pass rates (2011-2013)
2. PD Characteristics

    a. Gender
    b. Ethnicity
    c. Age
    d. Credential
    e. Education Level
    f. Route-to-Certification
    g. Total Years as PD
    h. Total Years Teaching
3. Faculty Characteristics
    a. Full time Faculty
    b. Adjunct Faculty with no clinical responsibilities
    c. Adjunct Faculty with clinical responsibilities
4. ATSs' Characteristics
    a. Number of ATSs
    b. Graduating Cohort GPA
    c. Graduating Cohort size

Research Hypotheses

1. There will be a significant difference between UPPs and GPPs for BOC exam first-attempt pass rates.
2. There will be a significant difference between UPPs and GPPs for PD characteristics.
3. There will be a significant difference between UPPs and GPPs for faculty characteristics.
4. There will be a significant difference between UPPs and GPPs for ATSs' characteristics.

Statistical Hypotheses

1. There will be a significant difference between UPPs and GPPs for BOC exam first-attempt pass rates.
2. There will be a significant difference between UPPs and GPPs for the PD's gender.
3. There will be a significant difference between UPPs and GPPs for the PD's ethnicity.
4. There will be a significant difference between UPPs and GPPs for the PD's credentials.
5. There will be a significant difference between UPPs and GPPs for the PD's education level.
6. There will be a significant difference UPPs and GPPs for the PD's route-to-certification.
7. There will be a significant difference between UPPs and GPPs for the PD's total years as a PD.
8. There will be a significant difference between UPPs and GPPs for the PD's total years teaching.
9. There will be a significant difference between UPPs and GPPs for the number of full time faculty.
10. There will be a significant difference between UPPs and GPPs for the number of adjunct faculty with no clinical responsibilities.
11. There will be a significant difference between UPPs and GPPs for the number of adjunct faculty with clinical responsibilities.
12. There will be a significant difference between UPPs and GPPs for the number of ATSs.
13. There will be a significant difference between UPPs and GPPs for the graduating cohort GPA.
14. There will be a significant difference between UPPs and GPPs for the graduating cohort size.

Null Hypotheses

1. There will not be a significant difference between UPPs and GPPs for BOC exam first-attempt pass rates.
2. There will not be a significant difference between UPPs and GPPs for the PD's gender.
3. There will not be a significant difference between UPPs and GPPs for the PD's ethnicity.
4. There will not be a significant difference between UPPs and GPPs for the PD's credentials.
5. There will not be a significant difference between UPPs and GPPs for the PD's education level.
6. There will not be a significant difference between UPPs and GPPs for the PD's route-to-certification.
7. There will not be a significant difference between UPPs and GPPs for the PD's total years as a PD.
8. There will not be a significant difference between UPPs and GPPs for the PD's total years teaching.
9. There will not be a significant difference between UPPs and GPPs for the number of full time faculty.
10. There will not be a significant difference between UPPs and GPPs for the number of adjunct faculty with no clinical responsibilities.
11. There will not be a significant difference between UPPs and GPPs for the number of adjunct faculty with clinical responsibilities.
12. There will not be a significant difference between UPPs and GPPs for the number of ATSs.

13. There will not be a significant difference between UPPs and GPPs for the graduating cohort GPA.
14. There will not be a significant difference between UPPs and GPPs for the graduating cohort size.

REFERENCES

1. NATA. Athletic Training Education Competencies 5th Edition2011:1-32.

2. BOC. *BOC Exam Candidate Handbook* 2012.

3. CAATE. *Standards for the Academic Accreditation of Professional Athletic Training Programs:* 2012.

4. BOC. *How to use the role delineation study/practice analysis, 6th edition*2010.

5. NATA. About NATA. 2012; http://www.nata.org/aboutNATA. Accessed December 8, 2012.

6. Odai ML. *An investigation of the relationships between selected characteristics and leadership outcomes of athletic training education program directors*. Miami, Florida: College of Education, Florida International University; 2012.

APPENDIX B

REVIEW OF LITERATURE

In 1950, 200 athletic trainers came together in Kansas City and founded the NATA. Over 60 years later, the profession has grown to over 41,000 certified athletic trainers[1,2]. As of 2014, there are 365 professional programs (PP), with 338 being undergraduate professional programs (UPPs) and 27 being graduate professional programs (GPPs). Today these PPs are influenced by three main organizations that make decisions effecting the direction of athletic training; the Commission on Accreditation of Athletic Training Education (CAATE), the Board of Certification (BOC), and the National Athletic Trainers' Association (NATA). Between these three organizations, the structure of athletic training education is carefully molded. They each have their own standards, but remain consistent among each other with their published documents. Such published documents include the NATA Athletic Training Education Competencies (Competencies), BOC Role Delineation Study and Standards of Practice (RDS/PA), and CAATE Standards for the Accreditation of Professional Athletic Training Programs (Standards). In the following sections I will introduce each of these three organizations and discuss their roles in the history of athletic training education.

Commission on Accreditation of Athletic Training Education

CAATE is the accrediting body of PPs in the United States. The collaborated sponsorship of the American Academy of Family Physicians (AAFP), the American Academy of Pediatrics (AAP), the American Orthopedic Society for Sports Medicine (AOSSM), and the NATA help to create and upkeep the standards for PPs. CAATE's main purpose is quality control of PPs. They are responsible for providing and enforcing the Standards. "The biggest way to enhance the education of the athletic trainer was to standardize it"[3]. PP program directors (PDs) use these Standards to acquire and maintain accreditation. The Standards consider the following concentrations—Sponsorship, Outcomes, Personnel, Program Delivery, Health &

Safety, Financial Resources, Facilities and Instructional Resources, Operational Policies and Fair Practices, Program Description and Requirements, Student Records.[4]

Board of Certification

The BOC is the professional accrediting certification body for athletic trainers in the United States. Every five years the BOC is re-accredited by the National Commission for Certifying Agencies (NCCA). The BOC is responsible for all aspects dealing with the professional certification of athletic trainers. This includes: creation and administering of the BOC examination (BOC exam), the RDS/PA, certification of athletic trainers, re-certification of athletic trainers, and management of misconduct of athletic training misconduct. The BOC is governed by a Board of Directors, which is made up of a Public Director, a Physician Director, a Corporate/Education Director, and six Athletic Trainer Directors.[5] In order to be a PD for athletic training, an individual must meet the following requirements: be a in good standing as a certified athletic trainer for a minimum of 5 years, cannot currently hold an office in a state regulatory board, not currently serving on the NATA Board of Directors, and cannot hold and leadership positions in the BOC, NATA, regional organizations, or state organizations.[6] The Board of Directors validates the BOC exam after the BOC exam Development Committee creates the test questions.[7] Test questions are formulated based on one of the five domains of athletic training developed from the BOC RDS/PA—Injury/Illness Prevention and Wellness Protection, Clinical Evaluation and Diagnosis, Immediate and Emergency Care, Treatment and Rehabilitation, and Organizational and Professional Health and Well-being.[8] The RDS/PA is a blueprint of what will appear on the BOC exam and the NATA uses the RDS/PA to keep the Competencies up-to-date in current content. This is used to help insure that what athletic

training students (ATSs) learn in their PP will be what the BOC exam will test them on.[9] The RDS/PA helps to validate both the Competencies and the BOC exam.[10,11]

National Athletic Trainers' Association

The NATA is the professional membership organization. Membership includes athletic trainers and supporters of the athletic training profession. The NATA's main role in PPs is through the involvement of the Executive Committee for Education (ECE) and the Professional Education Council (PEC). The ECE's main responsibility is to determine the direction of athletic training education for the future.[12] The PEC is responsible for getting feedback on earlier Competencies editions, creating new editions of Competencies, and submitting the final Competencies document. The Competencies are the minimum requirements for ATS's education and is intended to be used by PP's personnel to structure and enhance necessary educational objectives.[9] The Competencies' requirements address minimum skills and clinical abilities that must be mastered by ATS before graduation and sitting for the BOC exam.[4]

Athletic Training Education Reform

The changes that followed the 1996 Education Task Force (ETF) Recommendations to the NATA Board of Directors were a major push in the direction of athletic training education reform. The first recommendation proposed by the ETF, discussed the need to eliminate the internship route as means of becoming eligible for the BOC exam[2]. An article, published in the NATA News reported partial reasoning for this elimination revolved around the image and credibility of the profession[3]. The thought was, the two routes to certification would not be accepted long term among lawmakers and other healthcare[13]. At the time, Chad Starkey, chair of the NATA's Education Council, explained that this recommendation should be thought "not as the elimination of one route to certification, but as 'taking the best elements from each route to

form a singe, better educational model'"[14]. John Schrader, co-chair of the ETF, further supports Recommendation I with, "it brings the athletic trainer in line with other allied-health-care professions and their credentialing routes"[3].

In taking a closer look at two of the other accepted recommendations from the ETF, Recommendations XII and XIII, said that by 2014-2015 ATPs should look to align themselves in colleges of health-related professions versus colleges of kinesiology and to title their PP—Athletic Training. [1,15,16] The NATA's rationale for wanting the profession to have its own degree, stating this requirement "assures professional preparation; produces better prepared entry-level professionals; provides an easily identifiable method to determine academic preparation and qualification; enhances professional and academic recognition and standing; and strengthens legislative, revenue, and reimbursement initiatives". [1,16] This would later become a mandate from the NATA.[15]

In 2004, the time had come to close the internship route chapter of athletic training education. The internship route's academic requirements included human anatomy and physiology, exercise physiology, biomechanics, nutrition, first aid/CPR, basic athletic training, and advanced athletic training. The clinical requirements involved 1500 hours of supervised work (375 hours with high-risk sport and 500 hours in an allied health setting).[17] With the elimination of the internship route, the only means to be eligible for the BOC exam was to complete a degree from a CAAHEP accredited PP.[18] [15] Also, in 2004, NATA created the Educational Degree Task Force (EDTF) to evaluate requirements for an athletic training entry-level degree and develop recommendations for this degree.[1] In 2005, the NATA Board of Directors approved the EDTF recommendations, one specific recommendation being "that no

later than the 2014-2015 academic year, individuals entering the profession must have a degree in athletic training."[1] These changes created a growth in accredited PPs.

In 2006, the Joint Review Committee on Education Programs in Athletic Training (JRC-AT) becomes independent of CAAHEP. Prior to the elimination of the internship route, the CAAHEP created the JRC-AT, whose primary responsibility was to be the accrediting agency for entry-level ATPs. With the elimination of the internship route, CAAHEP was no longer needed. The JRC-AT soon thereafter changed its name to the Commission on Accreditation of Athletic Training Education (CAATE).[1,15,18] With this change, new Standards were published two years later in 2008 by CAATE.[19]

In 2007, the BOC exam was restructured and became a computer-based exam. The previous exam included three sections including written, written stimulation, and practical portions. Instead, this new exam was a computerized, 4-hour timed exam, made up of 175 scored and unscored questions, including "stand-alone multiple choice questions, stand-alone alternative items (drag-and-drop, text based simulation, multi-select, hot spot, etc.), and focused testlets (a 5-item focused testlet of a scenario by 5 key/critical questions related to that scenario".[8] The new exam scores range from 200 to 800 with a score of 500 needed to pass.[8,11]

Athletic Training Curriculums Revisions

As mentioned previously, the first athletic training curriculum model was approved in 1959. It took ten years until the NATA Professional Education Committee approved the first UPPs in 1969 (Mankato State University, Indiana State University, Lamar University, and New Mexico University). Three years later, in 1972, the NATA Professional Education Committee approved the first GPPs (Indiana State University and University of Arizona).[1,20] It is important to note that when the curriculum was approved, it was intended to prepare students for jobs as

physical education educators or to continue on to physical therapy (PT) school. The first curricular model included prerequisites for PT school such as, biology, zoology, physics, and chemistry, and/or social services.[1]

In the mid 1970s, the first standardized exam was administered and changes were made to the PP curriculum. The new curriculum eliminated the PT prerequisites and the required laboratory/clinical observation under a certified athletic trainer. It was thought that, at that time, athletic training should stand alone as its own profession. [1]

The next changes would occur following the NATA's 1980 mandate that by 1986 athletic training would have its own major or equivalent. In 1983, instead of the NATA recommending curriculum course requirements, they gave more flexibility to the professional program and began to recommend curriculum subject matter requirements. Along with the new subject matter requirements was the introduction of the first set of Competencies.[1]

As stated previously, in 2004, the internship route was eliminated—this led to the next and the most current changes in the PP curriculum. This most current curriculum changes involved more of setting the requirements for the clinical aspect of the curriculum. The new requirements involved students participating in a minimum of 2 years of academic clinical education under a certified athletic trainer. Students would also have to shadow a physician that has met the Approved Clinical Instructor requirements.[1]

Previous influencers of BOC exam success

Number of Clinical Hours and Experience

Previous research studies have shown that the number of clinical hours and the clinical location of where those hours were received were not predictive of how students will perform on the BOC exam. [21,22] In 2000, a survey-type study was conducted to see what BOC clinical

requirements would predict the outcomes of the BOC exam. It was found that the total number of clinical hours does not have significance on whether the student will pass. It was also found that clinical experience with football or other high-risk sports did not have significance on the student passing or not passing the BOC exam. It is important to note that this study examined the older version of the BOC exam when it was still made up of three components and candidates sitting for the exam could come from either the internship or curriculum routes.[22] A year later, in 2001, a study reported that there was not statistically significant relationship between the number of clinical hours accrued and successfully passing the exam. These results were consisted both the internship and curriculum route.[21]

GPA, previous standardized testing, preadmission criteria

A recently completed dissertation, in 2012, reported that overall GPA at time of admission into the PP and the grade from Anatomy and Physiology I were indicators of success on the exam. Students that earned a higher grade in Anatomy and Physiology I and had a higher GPA were more likely to pass the BOC exam on the first attempt. In addition, students that earned a lower grade in Anatomy and Physiology I and had a lower GPA were less likely to pass the BOC exam on the first attempt.[23] It is important to note that this study only looked at data from the current version of the exam and not previous versions of the exam.

In 1997, the combination of five academic variables showed a significant increase in a student passing the NATABOC exam on the first attempt—overall academic GPA, athletic training GPA, academic minor GPA, ACT composite score, and the number of semesters of university enrollment. According to this study, professional PDs should impress upon their students the importance of academic variables and having a high GPA as contributing factors in passing the exam on the first attempt.[24] A student's GPA is a significant predictor of how that

student will score on each of the individual sections from the previously used NATABOC exam and whether the student would pass the exam as a whole.[21]

Sex, ethnicity, age

Based on past research, the student's sex and age do not predict whether or not an individual will pass the BOC exam on the first attempt.[21] In a recent study, data was collected from three universities in Texas. Due to the large Hispanic population in that region, the author considered ethnicity as a potential influencer in BOC pass rates. It was found that Hispanic students were less likely to pass the NATABOC exam when compare to non-Hispanic students.[23] Exam pass rates have not been compared to other ethnicity groups.

Summary

The history of athletic training education has been one of great change and adjustment. In the last 40 years there has been substantial growth in the number of PPs. Currently, in 2014, there are a total 365 PPs, with 338 UPPs and 27 GPPs. In recent years, this immense growth in PPs has been cited as a concern for wanting to once again further standardize athletic training education. The current education reform discussion revolves around whether PPs should only occur at the graduate-level. There is a general lack of research specifically looking at characteristic components of UPPs and GPPs related to information about the PDs, faculty, and ATSs. In looking at ways to define PPs outcomes successes, the BOC exam pass rate is one way to determine the overall learning achieved by the ATSs[25], but there is minimal research examining the relationship of BOC exam first-attempt pass rates between UPPs and GPPs. Therefore, the purpose of this study is to compare BOC exam first-attempt pass rates and characteristic components between UPPs and GPPs. Specifically, my research questions are: 1)

How do BOC exam first-attempt pass rates compare between UPPs and GPPs? and 2*)* What differences exist between UPPs and GPPs' PD, faculty, and ATS characteristics?

REFERENCES

1. Perrin DH. Athletic training: from physical education to allied health. *Am Aca Kin Phys Educ.* 2007;59:111-123.
2. NATA. *Profile of athletic trainers.* Dallas, TX: NATA;2011.
3. McMullen D. Nata board takes first step in reform. *NATA News.* Vol February1997.
4. CAATE. *Standards for the Academic Accreditation of Professional Athletic Training Programs:* 2012.
5. BOC. BOC Standards of Professional Practice2006:1-4.
6. BOC. *Position Description Board Director*2007.
7. BOC. Role Delineation Study/Practice Analysis. http://www.bocatc.org/index.php?option=com_content&task=view&id=109&Itemid=117. Accessed September 30, 2012.
8. BOC. Exam Development & Scoring. http://www.bocatc.org/index.php?option=com_content&view=article&id=45&Itemid=47. Accessed September 30, 2012.
9. NATA. Athletic Training Education Competencies 5th Edition. 2011:1-32.
10. BOC. *How to use the role delineation study/practice analysis, 6th edition*2010.
11. BOC. *BOC Exam Candidate Handbook* 2012.
12. NATA. Executive Committee for Education (ECE). http://www.nata.org/access-read/public/executive-committee-education-ece. Accessed September 30, 2012.
13. McMullen D. Renewing athletic training education--a step into the future. *NATA News.* 1996(February):17-18.
14. Starkey C. Reforming athletic training education. *J Athl Train.* 1997;32(2):113-114.
15. Rich VJ, Kedrowski JJ, Richter S. Institutional profiles of caate accredited entry-level athletic training education programs in the united states. *J Athl Train.* 2008;3:108-114.
16. Force ET. Recommendations to the nata board of directors. *NATA News.* 1996;February:24-27.
17. Starkey C, Henderson J. Performance on the atheltic training certification examination based on candidates' routes to eligibility. *J Athl Train.* 1995;30(1):59-62.
18. Craig DI. Educational reform in athletic training: a policy analysis. *J Athl Train.* 2003;38(4):351-357.
19. CAATE. Standards for the accreditation of entry-level athletic training education programs. 2008:1-19.
20. Delforge GD, Behnke RS. The history and evolution of athletic training education in the united states. *J Athl Train.* 1999;34(1):53-61.
21. Middlemas DA, Manning JM, Gazzillo LM, Young J. Predicting performance on the national athletic trainers' association board of certification examination from grade point average and number of clinical hours. *J Athl Train.* 2001;36(2):136-140.
22. Turocy PS, Comfort RE, Perrin DH, Gieck JH. Clinical experiences are not predictive of outcomes on the nataboc examination. *J Athl Train.* 2000;35(1):70-75.
23. Esparza S. Predictors of success on professional credentialing examinations of athletic training undergraduates: Walden University; 2012:1-107.
24. Harrelson GL, Gallaspy JB, Knight HK, Leaver-Dunn D. Predictors of success on the nataboc certification examination. *J Athl Train.* 1997;32(4):323-327.

25. Turocy PS. Overview of athletic training education research publications. *J Athl Train.* 2002;37(4 Supplement):S162-S167.

APPENDIX C
ATHLETIC TRAINING PROGRAM AND PROGRAM DIRECTORS SURVEY (ATPPDS)

Introduction

You are invited to participate in a research study looking to see what academic aspects of an athletic training program impact first-attempt Board of Certification examination pass rates. You were selected as a possible subject because of your position as the Program Director of your University's athletic training program**.** We ask that you read this form and ask any questions you may have before agreeing to be in the study.

The study is being conducted by Nicole Phegley, LAT, ATC (graduate student), Joanne Klossner, Ph.D, ATC (Committee Chair), Carrie Docherty, Ph. D, ATC, FNATA (Research Advisor and Committee member), and Josh Yellen, Ed.D, LAT, ATC (Committee member).

STUDY PURPOSE

The purpose of this study is to examine the effects of different academic components of a CAATE accredited undergraduate, professional (entry-level) athletic training programs and compare them with first time Board of Certification examination pass rates.

PROCEDURES FOR THE STUDY:

In agreeing to be a participant in this study, you agree to provide truthful and correct information when responding to the survey questions based of your records and knowledge. The survey will consist of three categories of data: program director demographics, program demographics, and curriculum structure. Initial contact of subjects will be done by email. This email will provide information about the study, a link to the survey, and a password to give the subject access to the survey. The survey will be open for three weeks following the initial contact of the subject. After three weeks, the survey will be closed.

CONFIDENTIALITY

Efforts will be made to keep your personal information confidential. We cannot guarantee absolute confidentiality. Your personal information may be disclosed if required by law. Your identity will be held in confidence in reports in which the study may be published.

Organizations that may inspect and/or copy your research records for quality assurance and data analysis include groups such as the study investigator and his/her research associates, the Indiana University Institutional Review Board or its designees, and (as allowed by law) state or federal agencies, specifically the Office for Human Research Protections (OHRP) and the Food and Drug Administration (FDA) [for FDA-regulated research and research involving positron-emission scanning], the National Cancer Institute (NCI) [for research funded or supported by NCI], the National Institutes of Health (NIH) [for research funded or supported by NIH], etc., who may need to access your medical and/or research records.

PAYMENT

There is no payment for you taking part in this study.

CONTACTS FOR QUESTIONS OR PROBLEMS

For questions about the study, contact the researcher **Joanne Klossner, Ph.D, ATC** at **(812) 856-1570**.

For questions about your rights as a research participant or to discuss problems, complaints or concerns about a research study, or to obtain information, or offer input, contact the IU Human Subjects Office at (317) 278-3458 or [for Indianapolis] or (812) 856-4242 [for Bloomington] or (800) 696-2949.

VOLUNTARY NATURE OF STUDY

Taking part in this study is voluntary. You may choose not to take part or may leave the study at any time. Leaving the study will not result in any penalty or loss of benefits to which you are entitled. Your decision whether or not to participate in this study will not affect your current or future relations with Indiana University.

Please identify your university affiliation. (This will only be used to match your survey responses to the data provided by CAATE).

Program Director Demographics

What is your gender? Select one.

- ◯ Male
- ◯ Female

What is your ethnicity? Select all that apply.

- ☐ African American
- ☐ American Indian
- ☐ Caucasian
- ☐ Asian American
- ☐ Hispanic
- ☐ Multiracial
- ☐ Other

What is your current age? Select one.

- ◯ 25 or younger
- ◯ 25-35
- ◯ 36-45
- ◯ 46-55
- ◯ 56-65
- ◯ 65 or older

What credentials do you have? Select all that apply.

- ☐ ATC
- ☐ PT
- ☐ PA
- ☐ Other

Identify your highest level of education. Select one.

- ◯ Bachelor
- ◯ Master
- ◯ Doctorate
- ◯ Other

How did you become eligible for your athletic training credential? Select one.

- ◯ Internship route
- ◯ Curriculum route

How many years have you been a Program Director at your current University? Select one.

- ◯ 0-1
- ◯ 2-5
- ◯ 6-10
- ◯ 11-15
- ◯ 16-20
- ◯ 21+

How many years have you been a Program Director (total)? Select one.

- ◯ 0-1
- ◯ 2-5
- ◯ 6-10
- ◯ 11-15
- ◯ 16-20
- ◯ 21+

How many years have you taught in the classroom? Select one.

- ◯ 0-1
- ◯ 2-5
- ◯ 6-10
- ◯ 11-15
- ◯ 16-20
- ◯ 21+

Program Demographics

What district is your program located in? Select one.

How many undergraduate, professional AT students were enrolled in your ATP for the 2012-2013 academic year? (Do not count pre-AT students.)

How many undergraduate, professional senior-level AT students graduated in the Spring/Summer of 2013?

How many **full-time faculty members** taught in your undergraduate, professional ATP during the 2012-2013 academic year?

How many **adjunct faculty (no clinical responsibilities) members** taught in your undergraduate, professional ATP during the 2012-2013 academic year?

How many **adjunct faculty members with clinical responsibilities** taught in your undergraduate, professional ATP during the 2012-2013 academic year?

How many years has your undergraduate, professional ATP been accredited? (Begin counting with the agency that first accredited your ATP from the following: NATA, CAHEA, CAAHEP, or CAATE.)

What is the ratio of undergraduate, professional senior-level AT students who graduated from the ATP in Spring/Summer of 2013 compared with the number who started the ATP from the same cohort? (Ex. 9/10, means 9 seniors graduated in Spring/Summer of 2013, but 10 from this cohort were initially admitted to the ATP.)

What is the cohort average GPA of undergraduate, professional senior-level AT students who graduated from the ATP in Spring/Summer of 2013?

Curriculum Structure

How many semesters (once student is accepted into the program) is your undergraduate, professional ATP? Select one.

- ◯ 4
- ◯ 5
- ◯ 6
- ◯ 7+

Please list your required undergraduate, professional ATP course-sequencing plan. Please include names and credit hours of prerequisites and major ATP courses offered per semester in the ATP **OR** provide an URL link to your program of study.

	Fall	Spring
1st year		
2nd year		
3rd year		
4th year		

If opting to provide URL link to your program of study, please list here.

Do your students take a course (through the university or outsourced) to prepare them for the Board of Certification Exam? Select one.

- ◯ Yes
- ◯ No

Is this course mandatory or volunteer? Is this course administered by the University or is it outsourced?

	Course is mandatory		Course is administered by University	
	Yes	No	Yes	No
	◯	◯	◯	◯

What is the course called or what is the company's name?

CAATE Standards state under Section IV. Program Delivery: Subsection M.1. "Program must have a written policy

that delineates a minimum/maximum requirement for clinical hours." In the space below, please outline your policy specific to the minimum/maximum number of clinical education hours for undergraduate, professional students in the ATP. You may also provide an URL link, if this policy is described online at your institution.

If your ATP has undergone significant revisions to the curriculum in the last five years please describe. Indicate year of change and type of change, such as: adding and/or removing courses, changing course sequencing, etc.

APPENDIX D
STATISTICAL POWER

Statistical power was not calculated for this study due to the limited previous research and because the entire population was contacted. The entire population for this study included 365 PDs from CAATE accredited professional programs. The decision was made to use the entire population to give the study the greatest sample size and to give a greater statistical power to the data collected.

APPENDIX E
UNDERGRADUATE PROFESSIONAL PROGRAMS & PROGRAM DIRECTORS INFO

	University	Program Director	State
1	Adrian College	Tina Claiborne	MI
2	Albion College	Robert Moss	MI
3	Alderson-Broaddus College	Michael Boehke	WV
4	Alfred University	Chris Yartym	NY
5	Alma College	Phillip Andre	MI
6	Alvernia University	Thomas Porrazzo	PA
7	Anderson University	Christina Merckx	IN
8	Angelo State University	Kristi White	TX
9	Appalachian State University	Jamie Moul	NC
10	Aquinas College	JoAnne Gorant	MI
11	Arkansas State University	Amanda Wheeler	AR
12	Ashland University	Dennis Gruber	OH
13	Augustana College	Brian Gerry	SD
14	Aurora University	Oscar Krieger	IL
15	Averett University	Lee Burton	VA
16	Azusa Pacific University	Christopher Schmidt	CA
17	Baldwin Wallace University	Karyn Gentile	OH
18	Ball State University	Jennifer Popp	IN
19	Barry University	Sue Shapiro	FL
20	Barton College	Jennifer O'Donoghue	NC
21	Baylor University	Andrew Gallucci	TX
22	Benedictine College	Lanny Leroy	KS
23	Bethany College	David Slack	KS
24	Bethel College	Doug Maury	KS
25	Bethel University	Neal Dutton	MN
26	Boise State University	John McChesney	ID
27	Boston University	Sara Brown	MA
28	Bowling Green State University	Christopher Schommer	OH
29	Bridgewater College	Barbara Long	VA
30	Bridgewater State University	Suanne Maurer-Starks	MA
31	Brigham Young University	Mike Diede	UT
32	Buena Vista University	Abigail Tibbetts	IA
33	California State University-Fresno	Scott Sailor	CA
34	California State University-Fullerton	Robert Kersey	CA
35	California State University-Long Beach	Keith Freesemann	CA
36	California State University-Northridge	Shane Stecyk	CA
37	California State University-Sacramento	Doris Flores	CA
38	California University of Pennsylvania	Michael Meyer	PA

39	Campbell University	Catherine Simonson	NC
40	Canisius College	Peter Koehneke	NY
41	Capital University	Bonnie Goodwin	OH
42	Carroll University	John Lichosik	WI
43	Carson-Newman College	Eugene Dupas	TN
44	Carthage College	Daniel Ruffner	WI
45	Castleton State College	Reese Barber	VT
46	Catawba College	James Hand	NC
47	Cedarville University	Michael Weller	OH
48	Central College	John Roslien	IA
49	Central Connecticut State University	Peter Morano	CT
50	Central Methodist University	Wade Welton	MO
51	Central Michigan University	Rene Shingles	MI
52	Chapman University	Jason Bennett	CA
53	Charleston Southern University	Philip Ford	SC
54	Clarke University	Melody Higgins	IA
55	Coe College	Chad Libby	IA
56	Colby-Sawyer College	Jennifer Austin	NH
57	College of Charleston	Susan Rozzi	SC
58	College of Mount St. Joseph	BC Charles-Liscombe	OH
59	Colorado Mesa University	Geana Gaasch	CO
60	Colorado State University-Pueblo	Roger Clark	CO
61	Concord University	Joseph Beckett	WV
62	Concordia University-Irvine	Jennifer Rizzo	CA
63	Concordia University Wisconsin	Katherine Liesener	WI
64	Culver-Stockton College	Robert Carmichael	MO
65	Cumberland University	Katie Arnold	TN
66	Dakota Wesleyan University	Daniel Wagner	SD
67	Defiance College	Kathleen Westfall	OH
68	Delta State University	Mary Jones	MS
69	Denison University	Eric Winters	OH
70	Dominican College	Jim Crawley	NY
71	Duquesne University	Paula Turocy	PA
72	East Carolina University	Katie Walsh Flanagan	NC
73	East Central University	Jason Prather	OK
74	East Stroudsburg University	John Hauth	PA
75	East Texas Baptist University	David Collins	TX
76	Eastern Illinois University	Lee Ann Price	IL
77	Eastern Kentucky University	Eric Fuchs	KY
78	Eastern Michigan University	Jodi Schumacher	MI
79	Eastern University	Thomas Franek	PA

80	Eastern Washington University	Jeffrey Kawaguchi	WA
81	Emory & Henry College	Dennis Cobler	VA
82	Emporia State University	Matthew Howe	KS
83	Endicott College	Deborah Swanton	MA
84	Erskine College	Scott DeCiantis	SC
85	Florida Gulf Coast University	Jason Craddock	FL
86	Florida Southern College	Sue Stanley-Green	FL
87	Fort Hays State University	David Fitzhugh	KS
88	Fort Lewis College	Carrie Meyer	CO
89	Franklin College	Kathy Remsburg	IN
90	Frostburg State University	Anthony Zaloga	MD
91	Gardner-Webb University	Heather Hartsell	NC
92	George Fox University	Dana Bates	OR
93	George Mason University	Amanda Caswell	VA
94	George Washington University	Beverly Westerman	DC
95	Georgetown College	Eric Brooks	KY
96	Georgia College & State University	Kirk Armstrong	GA
97	Georgia Southern University	Steve Patterson	GA
98	Graceland University	Diane Bartholomew	IA
99	Grand Canyon University	Donna Gerakos	AZ
100	Grand Valley State University	Shari Bartz-Smith	MI
101	Greensboro College	Micheel Lesperance	NC
102	Gustavus Adolphus College	Kyle Momsen	MN
103	Hardin-Simmons University	David Stuckey	TX
104	Harding University	Randy Lambeth	AR
105	Heidelberg University	Trevor Bates	OH
106	Henderson State University	John Miller	AR
107	High Point University	Jolene Henning	NC
108	Hofstra University	Jayne Ellinger	NY
109	Hope College	Kirk Brumels	MI
110	Huntingdon College	Roxanne St.Martin	AL
111	Illinois State University	Jeremy Hawkins	IL
112	Indiana State University	Amber Northam	IN
113	Indiana University	Katie Grove	IN
114	Indiana University of Pennsylvania	Jose Rivera	PA
115	Indiana Wesleyan University	Adam Thompson	IN
116	Iowa State University	Mary Meier	IA
117	Ithaca College	Paul Geisler	NY
118	James Madison University	Jamie Frye	VA
119	Kansas State University	Shawna Jordan	KS
120	Kansas Wesleyan University	Matthew Williams	KS

121	Kean University	Gary Ball	NJ
122	Keene State College	Wanda Swiger	NH
123	Kent State College	Kimberly Peer	OH
124	King University	Leigh Adams	TN
125	King's College	Jeremy Simington	PA
126	Lake Superior State University	Joseph Susi	MI
127	Lander University	Daniel Hannah	SC
128	Lasell College	Cristina Haverty	MA
129	Lee University	Kelly Lumpkin	TN
130	Lees-McRae College	Rita Smith	NC
131	Lewis University	Cathy Bohlin	IL
132	Liberty University	Jerry Pickard	VA
133	Limestone College	Vanessa Fulbright	SC
134	Lincoln Memorial University	Jack Mansfield	TN
135	Lindenwood University	Randy Biggerstaff	MO
136	Linfield College	Laura Kenow	OR
137	Lock Haven University	Eric Lippincott	PA
138	Longwood University	Sharon Menegoni	VA
139	Loras College	Nathan Newman	IA
140	Louisiana College	Janet Passman	LA
141	Louisiana State University	Ray Castle	LA
142	Loyola Marymount University	David Ramirez	CA
143	Luther College	Brian Solberg	IA
144	Lynchburg College	Debbie Bradney	VA
145	Manchester University	Jeffrey Beer	IN
146	Marietta College	Richard (Sam) Crowther	OH
147	Marist College	Michael Powers	NY
148	Marquette University	Christopher Geiser	WI
149	Mars Hill University	Kelly Ottie	NC
150	Marshall University	Abbey Dondanville	WV
151	Marywood University	William Gear	PA
152	Massachusetts College of Liberal Arts	Peter Hoyt	MA
153	McKendree University	Dawn Hankins	IL
154	McNeese State University	Chad Chaisson	LA
155	Mercyhurst University	Sue Gushie	PA
156	Merrimack College	Birgid Hopkins	MA
157	Messiah College	Edwin Bush	PA
158	Methodist University	Hugh Harling	NC
159	Metropolitan State University of Denver	Christine Odell	CO
160	Miami University	Brett Massie	OH
161	Michigan State University	Tracey Covassin	MI

162	MidAmerica Nazarene University	David Colt	KS
163	Middle Tennessee State University	Helen Binkley	TN
164	Midwestern State University	Benito Velasquez	TX
165	Millikin University	Tisha Hess	IL
166	Minnesota State University-Mankato	Patrick Sexton	MN
167	Minnesota State University-Moorhead	Dawn Hammerschmidt	MN
168	Minot State University	Heather Golly	ND
169	Missouri State University	Tona Hetzler	MO
170	Missouri Valley College	Karla Bruntzel	MO
171	Montclair State University	David Middlemas	NJ
172	Murray State University	Jeremy Erdmann	KY
173	Nebraska Wesleyan University	Mark Stutz	NE
174	Neumann University	Hubert Lee	PA
175	New Mexico State University	Mikaela Boham	NH
176	Nicholls State University	Gerard White	NM
177	North Carolina Central University	Carla Stoddard	LA
178	North Central College	Heidi Matthews	NC
179	North Park University	Andrew Lundgren	IL
180	Northern Arizona University	Debbie Craig	AZ
181	Northern Illinois University	Gretchen Schlabach	IL
182	Northern Kentucky University	Trey Morgan	KY
183	Northern Michigan University	Julie Rochester	MI
184	Northwestern College	Jennifer Rogers	IA
185	Norwich University	Eduardo Hernandez	VT
186	Nova Southeastern University	Elizabeth Swann	FL
187	Ohio Northern University	Michelle Wilson	OH
188	Ohio University	Kayla Shinew	OH
189	Oklahoma State University	Aric Warren	OK
190	Olivet Nazarene University	Brian Hyma	IL
191	Oregon State University	Kimberly Hannigan	OR
192	Otterbein University	Joan Rocks	OH
193	Palm Beach Atlantic University	Tyler Hamilton	FL
194	Park University	Tom Bertoncino	MO
195	Pennsylvania State University	Lauren Kramer	PA
196	Plymouth State University	Linda Levy	NH
197	Point Loma Nazarene University	Jeff Sullivan	CA
198	Purdue University	Larry Leverenz	IN
199	Quinnipiac University	Lennart Johns	CT
200	Radford University	Angela Mickle	VA
201	Roanoke University	James Buriak	VA
202	Rowan College	Robert Sterner	NJ

203	Sacred Heart University	Gail Samdperil	CT
204	Saginaw Valley State University	David Berry	MI
205	Salem State University	Joseph Gallo	MA
206	Salisbury University	Donna Ritenour	MD
207	Samford University	Robert Hensarling	AL
208	San Diego State University	Lea Thomann	CA
209	San Jose State University	Holly Brown	CA
210	Shaw University	Corrie Struble	NC
211	Shawnee State University	James Ward	OH
212	Simpson College	Mike Hadden	IA
213	Slippery Rock University	Jacqueline Williams	PA
214	South Dakota State University	Trevor Roiger	SD
215	Southeast Missouri State University	Susan Wehring	MO
216	Southeastern Louisiana University	Josh Yellen	LA
217	Southern Arkansas University	Jan Kiilsgaard	AR
218	Southern Connecticut State University	Gary Morin	CT
219	Southern Nazarene University	Rachel Hildebrand	OK
220	Southern Utah University	Ben Davidson	UT
221	Southwest Baptist University	Todd John	MO
222	Southwestern College	Lisa Braun	KS
223	Southwestern Oklahoma State University	Jessica Young	OK
224	Springfield College	Mary Barnum	MA
225	St. Cloud State University	William Picconatto	MN
226	Sterling College	Ryan Manely	KS
227	SUNY-Bockport	Timothy Henry	NY
228	SUNY-Cortland	Thomas TK Koesterer	NY
229	SUNY-Stony Brook	Kathryn Koshansky	NY
230	Tabor College	James Moore	KS
231	Temple University	Margo Greicar	PA
232	Texas A&M University-Commerce	Sarah Mitchell	TX
233	Texas A&M University-Corpus Christi	Mary Williams	TX
234	Texas Christian University	Stephanie Jevas	TX
235	Texas Lutheran University	Brian Coulombe	TX
236	Texas State University	Rod Harter	TX
237	Texas Wesleyan University	Pamela Rast	TX
238	The Florida State University	Angela Sehgal	FL
239	The Ohio State University	Mark Merrick	OH
240	The University of Alabama	Deidre Leaver-Dunn	AL
241	The University of West Alabama	R. T. Floyd	AL
242	Towson University	Michael Higgins	MD
243	Trinity International University	Karl Glass	IL

244	Troy University	Amanda Andrews Benson	AL
245	Truman State University	Michelle Boyd	MO
246	Tusculum College	Thomas Stueber	TN
247	Union College	Lucius Wilson	KY
248	Union University	Cliff Pawley	TN
249	University of Akron	Stacey Buser	OH
250	University of Central Arkansas	Ellen Epping	AR
251	University of Central Florida	Kristen Schellhase	FL
252	University of Central Missouri	Brian Hughes	MO
253	University of Charleston	Ericka Zimmerman	WV
254	University of Cincinnati	Patricia Graman	OH
255	University of Connecticut	Stephanie Mazerolle	CT
256	University of Delaware	Thomas Kaminski	DE
257	University of Evansville	Jeffrey Tilly	IN
258	University of Florida	Patricia Tripp	FL
259	University of Georgia	Cathleen Brown Crowell	GA
260	University of Idaho	Alan Nasypany	ID
261	University of Indianapolis	Connie Pumpelly	IN
262	University of Iowa	Danny Foster	IA
263	University of Kansas	David Carr	KS
264	University of LaVerne	Paul Alvarez	CA
265	University of Louisiana at Lafayette	Samar McCann	LA
266	University of Maine-Orono	Sherrie Weeks	ME
267	University of Maine at Presque Isle	Barbara Blackstone	ME
268	University of Mary	Rachel Johnson Krug	ND
269	University of Miami	Kysha Harriell	FL
270	University of Michigan	Brian Czajka	MI
271	University of Minnesota-Duluth	Megan Streveler	MN
272	University of Mobile	William Carroll	AL
273	University of Montana	Valerie Moody	MT
274	University of Mount Union	Morgan Cooper Bagley	OH
275	University of Nebraska-Kearney	Scott Unruh	NE
276	University of Nebraska-Lincoln	Jeffrey Rudy	NE
277	University of Nebraska-Omaha	Melanie McGrath	NE
278	University of Nevada-Las Vegas	Tedd Girouard	NV
279	University of New England	Wayne Lamarre	ME
280	University of New Hampshire	Daniel Sedory	NH
281	University of New Mexico	Susan McGowen	NM
282	University of North Carolina-Chapel Hill	Meredith Petschauer	NC
283	University of North Carolina-Charlotte	Tricia Turner	NC
284	University of North Carolina-Wilmington	Kirk Brown	NC

285	University of North Carolina at Pembroke	Susan Edkins	NC
286	University of North Dakota	Steven Westereng	ND
287	University of North Florida	Joel Beam	FL
288	University of North Georgia	Jessica Miles	GA
289	University of Northern Colorado	Shannon Courtney	CO
290	University of Northern Iowa	Kelli Snyder	IA
291	University of Pittsburgh	Kevin Conley	PA
292	University of Pittsburgh at Bradford	Jason Honeck	PA
293	University of South Carolina	Jim Mensch	SC
294	University of South Florida	Steven Zinder	FL
295	University of Southern Maine	Brian Toy	ME
296	University of Southern Mississippi	Bill Holcomb	MS
297	University of Tampa	J.C. Andersen	FL
298	University of Texas at Arlington	Paul Krawietz	TX
299	University of Texas at Austin	Brian Farr	TX
300	University of the Incarnate Word	William Robinson	TX
301	University of the Pacific	Jolene Baker	CA
302	University of Toledo	Phillip Gribble	OH
303	University of Tulsa	Robin Ploeger	OK
304	University of Utah	Bradley Hayes	UT
305	University of Vermont	Alan Maynard	VT
306	University of West Florida	Richard Frazee	FL
307	University of Wisconsin-Eau Claire	Robert Stow	WI
308	University of Wisconsin- LaCrosse	Mark Gibson	WI
309	University of Wisconsin-Madison	Andrew Winterstein	WI
310	University of Wisconsin-Milwaukee	Jennifer Earl-Boehm	WI
311	University of Wisconsin-Oshkosh	Robert Sipes	WI
312	University of Wisconsin-Stevens Point	Holly Schmies	WI
313	Upper Iowa University	Angela Leete	IA
314	Urbana University	Brian Edwards	OH
315	Valdosta State University	Chuck Conner	GA
316	Washburn University	John Burns	KS
317	Washington State University	Kasee Hildenbraud	WA
318	Waynesburg University	Drue Stapleton	PA
319	Weber State University	Jennifer Ostrowski	UT
320	West Chester University	Neil Curtis	PA
321	West Texas A&M University	Lorna Strong	TX
322	West Virginia University	Vincent Stilger	WV
323	West Virginia Wesleyan College	Rae Emrick	WV
324	Western Carolina University	Jill Manners	NC
325	Western Illinois University	Renee Polubinsky	IL

326	Western Michigan University	Gayle Thompson	MI
327	Westfield State University	William Miller	MA
328	Wheeling Jesuit University	David Dennis	WV
329	Whitworth University	Cynthia Wright	WA
330	Wichita State University	Rich Bomgardner	KS
331	William Paterson University	Linda Gazzillo Diaz	NJ
332	Williams Woods University	Anthony Lungstrum	MO
333	Wilmington College	Larry Howard	OH
334	Wingate University	Traci Gearhart	NC
335	Winona State University	Shellie Nelson	MN
336	Winthrop University	Alice McLaine	SC
337	Wright State University	Tony Ortiz	OH
338	Xavier University	Tina Davlin-Pater	OH

APPENDIX F
GRADUATE PROFESSIONAL PROGRAMS & PROGRAM DIRECTORS INFO

	University	Program Director	State
1	Bloomsburg University	Joseph Hazzard	PA
2	Bridgewater State University	Suanne Maurer-Starks	MA
3	California Baptist University	Abigail Tibbetts	CA
4	Daemen College	Lynn Matthews	NY
5	Florida International University	Jennifer Doherty-Restrepo	FL
6	Lenoir-Rhyne University	Michael McGee	NC
7	Long Island University-Brooklyn Campus	Tracye Rawis-Martin	NY
8	Manchester University	Mark Huntington	IN
9	Montana State University-Billings	Suzette Nynas	MT
10	North Dakota State University	Pamela Hansen	ND
11	Plymouth State University	Marjorie King	NH
12	Saint Louis University	Anthony Breitbach	MO
13	Seton Hall University	Carolyn Goeckel	NJ
14	Shenandoah University	Rose Schmieg	VA
15	South Dakota State University	Trevor Roiger	SD
16	Stephen F. Austin State University	Linda Bobo	TX
17	Texas A&M University- College Station	Lori Greenwood	TX
18	Texas Tech University Health Sciences Center	LesLee Taylor	TX
19	The College of St. Scholastica	Hal Strough	MN
20	University of Arkansas	Jeff Bonacci	AR
21	University of Central Oklahoma	Jeff McKibbin	OK
22	University of Findlay	Susan Stevens	OH
23	University of Hawaii, Manoa	Kaori Tamura	HI
24	University of Nebraska-Omaha	Melanie McGrath	NE
25	University of North Carolina-Greensboro	Scott Ross	NC
26	University of Tennessee at Chattanooga	Marisa Colston	TN
27	Weber State University	Valerie Herzog	UT